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Backyard Sugarcane[1]

L. Baucum, R.W. Rice, and T. J. Schueneman[2]

Introduction

Sugarcane is a tropical perennial grass, belonging to the genus *Saccharum.* Although sugarcane thrives in humid temperatures, between 70 and 90° F, it can be grown in most areas of the southern United States. Sugarcane is vegetatively propagated by means of "seed-cane" which is a section of a mature cane stalk with one or more buds (or “eyes”). It re-sprouts (ratoons) annually from underground buds on basal (bottom or lower) portions of old stalks. Depending on variety and growing conditions, a 2- to 4-pound stalk with 15% sugar will be produced in about 12 months from an original planting, or 9 to 11 months from ratoon regrowth.

Types

Sugarcane varieties can be placed into one of three categories according to their physical and chemical characteristics. Chewing canes contain fibers that stick together when chewed, making it easier to spit out the pulp once the sugary juice has been consumed. Crystal canes (typically commercial varieties) must contain a high percentage of sucrose, since this is the sugar molecule that easily forms into crystals when concentrated during a heating and evaporation process. Syrup canes contain less sucrose than crystal canes, but have additional kinds of sugar molecules which resist crystallization, so the juice can be concentrated into syrup. “Backyard sugarcane” for hobby production is grown on farms ranging from a fraction of an acre to 10 or 20 acres and usually consists of either chewing varieties or syrup varieties. Most sugarcane for syrup production is grown in Georgia, Alabama, Mississippi, Louisiana, and north Florida, a region that is known as the ”sugarcane syrup belt”.

Varieties

Many old-named varieties are still available, but often only from local sources, having been saved from oblivion by farmers or hobbyists. Good sources of seed-cane are the 'Classified Ads' section of the "Market Bulletin" published by the Florida Department of Agriculture and Consumer Services,

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2. L. Baucum, regional extension agent II, Hendry County Extension Service, R. W. Rice, agronomic crops extension agent III, Palm Beach County Cooperative Extension Service, and T. J. Schueneman (retired) extension agent IV, Palm Beach Cooperative Extension Service, Belle Glade FL; Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

and the University of Florida/IFAS Gadsden County Extension Office (telephone 850-875-7255). Some varieties to look for are:

Chewing Canes: Yellow Gal; CP57-603; CP80-1837; CP80-1907; NG57-258; White Transparent.

Crystal Canes: Any commercial variety from south Florida or Louisiana. Information on these varieties may be found in the UF/IFAS sugarcane handbook, online at: http://edis.ifas.ufl.edu/TOPIC_Sugarcane_Varieties

Syrup Canes: CP36-111; CP52-48; CP67-500; Louisiana Ribbon; Louisiana Purple; Louisiana Striped; POJ2878; Cayana.

Site Selection

Avoid planting along the edges of sidewalks or pathways since passers-by might get cut by the sharp-edged sugarcane leaves. Another important consideration is that some varieties are prone to fall over (lodge) when mature, which would block sidewalks and pathways. A well-drained, sunny location is desirable—the more sun the better. Sugarcane planted in partially shaded areas such as near a building or a wall will have reduced plant growth. Periods of stress, including too much or too little moisture, temperatures below 70°F, and soil fertility and pH extremes (optimum range being pH 5.5-6.5) will result in shorter inter-nodes and reduced growth.

Because sugarcane produces an extensive root system, the soil should be in a good, well-worked condition for 2 to 3 feet on all sides and below the seed-piece before planting. During the first three weeks after planting, flooded conditions can kill germinating buds and new shoots, so make sure you can provide good drainage if conditions require it.

Sugarcane makes a natural windbreak around and in your garden. In many countries, vegetable crops are planted between the rows of newly-planted sugarcane. Because their growing season is relatively short, the inter-cropped vegetables can be harvested before the sugarcane gets tall enough to shade them out.

Planting Material

Sugarcane varieties throughout the world are actually different versions of a multi-species hybrid, thus the variety characteristics are not genetically captured in the seeds. In other words, sugarcane does not breed true from seeds. Variety characteristics are preserved through vegetative propagation, namely, by re-planting part of the original sugarcane plant. From this perspective, sugarcane varieties are considered clones from an original mother plant. In laboratory settings, tissue culturing is used to produce plants genetically similar to a mother plant. In field scenarios, one needs to obtain mature sugarcane stalks (with viable buds or eyes) from a variety/clone of interest. In the case of backyard sugarcane hobbyists, this generally means you'll need to get cane stalks from plants you already have or get them from another willing grower who has the variety/clone that youre interested in. Sugarcane that is vegetatively propagated in this manner will retain the characteristics of the mother plant, and very likely will not alter (in a genetic sense) over time.

Sugarcane stalks are segmented about every 6 inches by nodes, and at each node there is a potential growing point called the bud or “eye”. On adjacent nodes the buds are located on opposite sides of the stalk. At planting, cut each stalk into 2- to 3-foot sections (called “seed-pieces”). Aim for seed-pieces that have around 6 buds, to ensure that a few eyes survive the planting environment. Keep in mind that cutting long stalks into shorter seed-pieces actually improves bud germination. Planting whole stalks is not recommended since buds closest to the cut ends tend to get activated, while interior buds might not get activated. Single-node pieces (“eye-pieces”) can be planted in pots or trays and later transplanted at another site.

Cut stalks can be stored under cool, moist conditions for two weeks prior to planting. For storage longer that two weeks, it helps to dip the seed-piece ends in hot paraffin, which will help protect the inner stalk from drying out.

Planting

To ensure adequate development of underground portions of the sugarcane plant prior to a killing frost, planting should be done in September through early October in north Florida.

Sugarcane can be planted as a single row (typical configuration for windbreaks) or in multiple parallel rows on 4 to 5 foot centers. Dig a furrow 7 to 8 inches deep in loam or clay-loam soils, and slightly deeper in sand or highly organic soils. The amount of fertilizer to use for optimum growth will vary largely depending on soil type, rainfall, sunshine, crop history, etc. Submitting soil samples to a soil-testing lab that offers a calibrated soil-test will produce reliable fertilizer recommendations that are appropriate for your growing environment. A common practice for small plots is to loosely spread 1 pound of 8-8-8 fertilizer, or equivalent, per ten feet of furrow. Cover the fertilizer with 2 inches of soil and lay the sugarcane seed-pieces horizontally in the furrow. To prevent vacant areas caused by uneven bud germination, it is recommended that a single row be planted with two pieces of cane placed side by side, lapping the end of one piece with the middle of the neighboring piece. Cover to a depth of 2 to 3 inches with loose soil.

Early Care

Keep the soil slightly moist, but not wet. The young growth period of sugarcane is particularly sensitive to excessive moisture. Within 1 to 3 weeks, depending on soil temperatures, new shoots should emerge through the soil. The sugarcane crop that grows during the first year is called the “plant cane” crop. As the shoots elongate, gradually replace the soil in the furrow until the furrow becomes slightly elevated. This encourages earlier shoot growth and provides a method of early weed control. As new leaves emerge from the soil, they are susceptible to frost damage. It takes several weeks for the really vulnerable part of the shoot, the meristem, to emerge from the soil. Because of this, early frost damage is usually not fatal, since the buried and undamaged meristem will continue to produce new leaf tissue. Meristems are probably emerged by the time the leaves are 18 to 36 inches tall, at which time the vulnerable meristem can be severely injured by a frost. Once the shoots are 6-8 inches tall, they can tolerate standing water for short periods of time.

Formation of the Stool

As the new shoot grows, it begins to form internodes with adjacent buds located on alternate sides of the stalk. After several weeks, these newly formed buds (still located 5 to 8 inches underground) will sprout, forming secondary shoots. These in turn will form buds that produce tertiary shoots. These secondary and tertiary shoots are called tillers, and the primary shoot plus all of the tillers are called the stool. The tendency to form tillers is variety specific and varies from few to many tillers. Sugarcane is a multi-year crop, thus the harvested stool is the site for next years regrowth. New primary shoots each year emerge from the basal buds located on stools from last years growth. Over the years this growth pattern gradually elevates the crown and expands the stool's circumference. Although the stool typically gets bigger over time, the combined effects of winter and mechanical damage leads to declining basal bud viability. Eventually, stalk production declines, so expect to replant every 5 to 10 years.

Pest Management

Weeds are controlled by hand weeding, cultivation, mulching or chemical control (see http://edis.ifas.ufl.edu/WG004 for details on sugarcane weed control). Most sugarcane varieties are bred to be resistant to common plant diseases when released; however, resistance may break down over time, and you should consider switching varieties if this occurs. Please see http://edis.ifas.ufl.edu/TOPIC_Sugarcane_Diseases for fact sheets on some common sugarcane diseases. There are no fungicides on the market for disease pests. Insect pests of sugarcane include soil-inhabiting wireworms and grubs, a stalk borer, and aphids (see http://edis.ifas.ufl.edu/TOPIC_Sugarcane_Insects for an overview of insects in Florida sugarcane). However, no controls are recommended. Sugarcane growth is so rapid that the plant can tolerate considerable insect infestation and still produce a satisfactory crop. Rodents and rabbits are by far the

most serious pests the gardener will encounter and these can be managed with physical barriers.

Harvesting

Given a reasonable planting date the preceding year, cane will be ready for harvest anytime after November 1st. Keep an eye on the weather, since you'll want to harvest before a killing freeze. Keep in mind that harvesting too early reduces current yields and increases the potential for winter injury since young regrowth is vulnerable. Using a sharp knife or lopping shears, cut stalks as close to the ground as possible. Sugar concentration is highest in the basal (bottom or lower) portion of the stalk. Trim off the green upper portion of the stalk that lacks sugar accumulating nodes. You are now ready to either squeeze/crush the stalks for juice collection or cut the stalks into smaller pieces for chewing enjoyment.

Overwintering

Once the plant cane has been harvested, some thought must be given to the care of the stubble (remnants of the plant cane) over the winter. Some growers in north Florida, after trimming each row of sugarcane stubble close to the ground with a rotary mower, place a small mound of soil over the row for protection against excessively cold weather. On the other hand, the UF/IFAS North Florida Research and Education Center (Quincy) does not mound up their rows and reports no significant winter-injury. Re-growth in the spring, called the stubble or ratoon crop, will emerge through the soil in 1 to 2 months in response to warmer soil temperatures. Don't forget to fertilize the stubble crop. About the time re-growth starts, use the same rate as applied to the plant crop and sprinkle it over the top of the stubble row or apply as a side-dress. And enjoy many years of hopefully trouble-free cane production for syrup or chewing.